

# Exhibit Q



**Roku**

# Design for the High End, Gracefully Degrade for Low End

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# Introduction

This presentation contains a small subset of info for creating a well-designed Roku Channel.

For more info, please read our Design & User Experience Guidelines:

<https://sdkdocs.roku.com/display/sdkdoc/Design+and+User+Experience+Guidelines>





## Process & Research



# Overview

Small up-stream investment  
Big down-stream payoff

What is success?





# Process & Research

- Interview clients
- Know the audience
- User testing





## Design for high and low-end devices



## Overview

Intentionally designing for the lowest-common denominator means all users receive a compromised channel experience, even those with a premium device.

Create a great design that takes advantage of the high-end products while gracefully degrading for lower-end products to ensure core functionality.

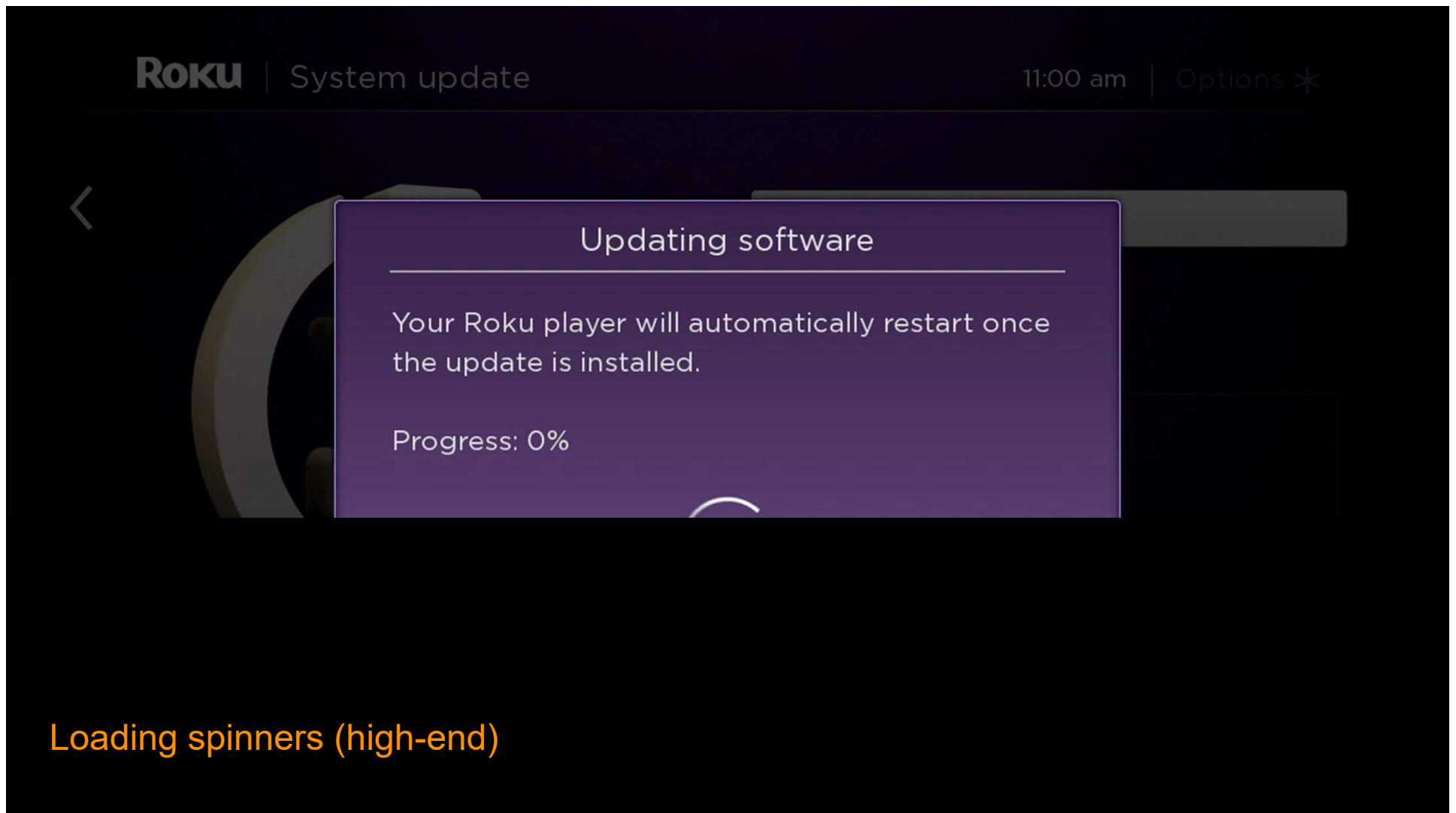




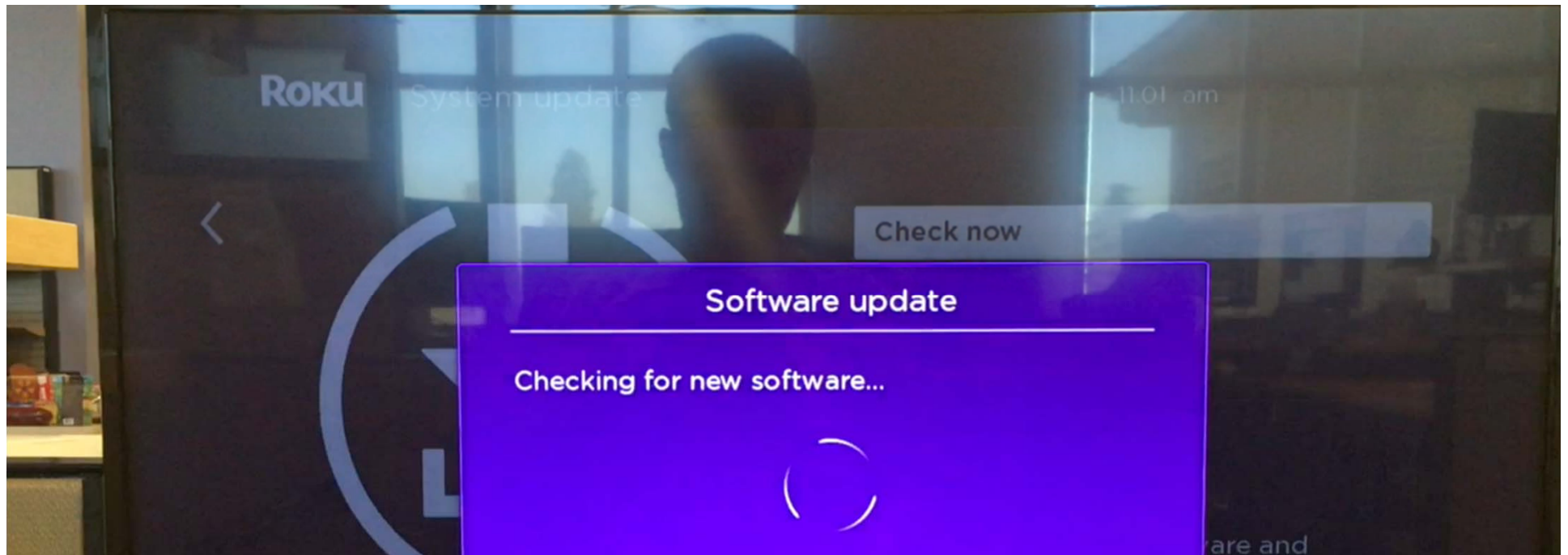
## Simple UI examples

- Loading spinners / indicator
- Alpha gradients
- Screen transitions





Loading spinners (high-end)



Loading spinners (low-end)

Roku | Moneyball (2011)

4:43 pm | Options \*



2011 | PG-13 | 2 hr 13 min

Drama



Rent from \$1.99

HD ✓



Rent from \$2.99

HD ✓

Rent from \$2.99

HD ✓



Rent from \$2.99

HD ✓



Follow this movie on Roku

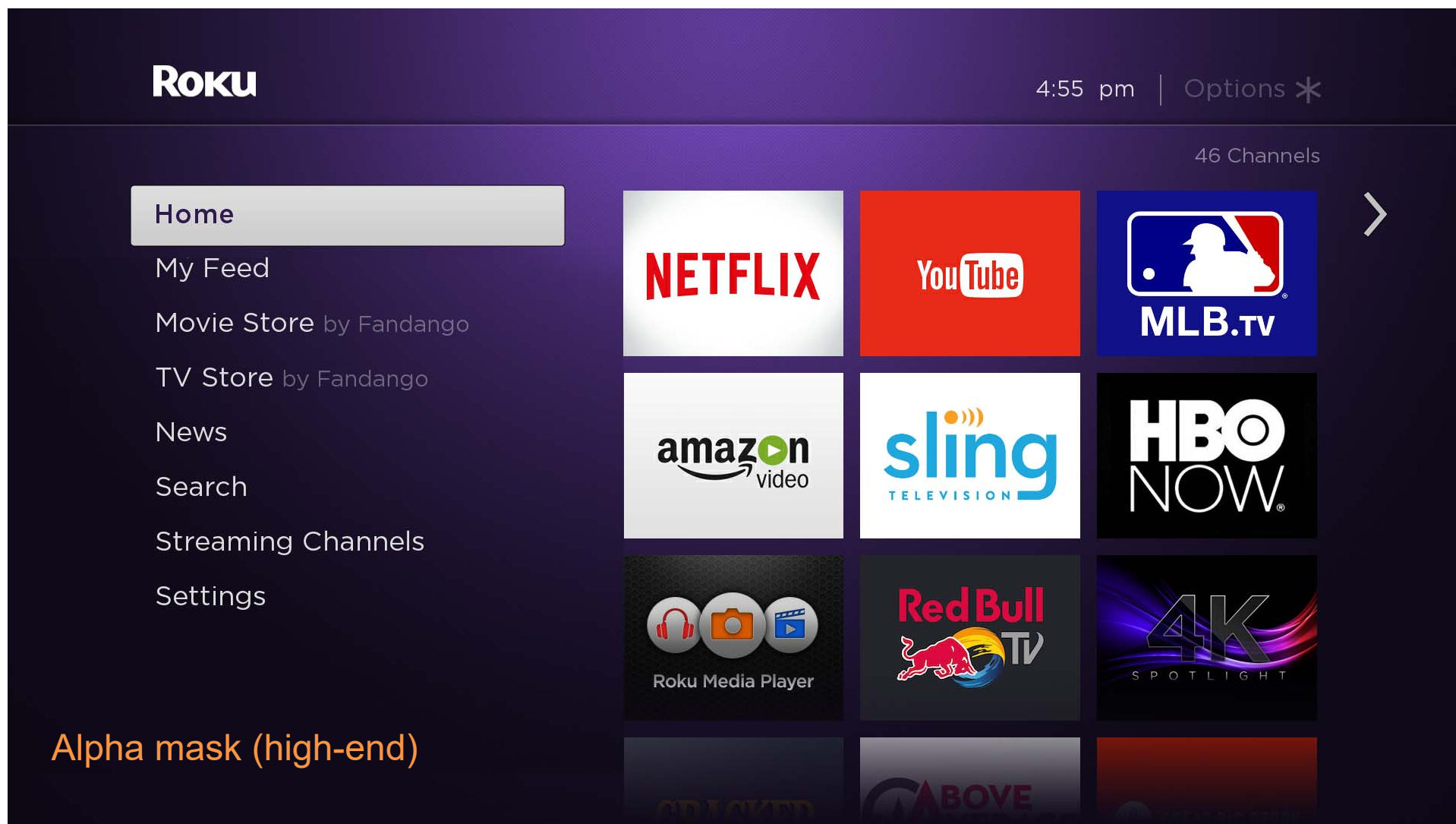


Faced with a tight budget, a baseball manager (Brad Pitt) and his partner (Jonah Hill) recruit bargain-bin players that scouts have... (\* for more)

Directed by: Bennett Miller

Brad Pitt, Veto Ruginis, Tammy Blanchard

Alpha mask (high-end)



Alpha mask (high-end)



Roku | Moneyball (2011) 4:49 pm | Options \*

<  >

**MONEYBALL**

★★★★★

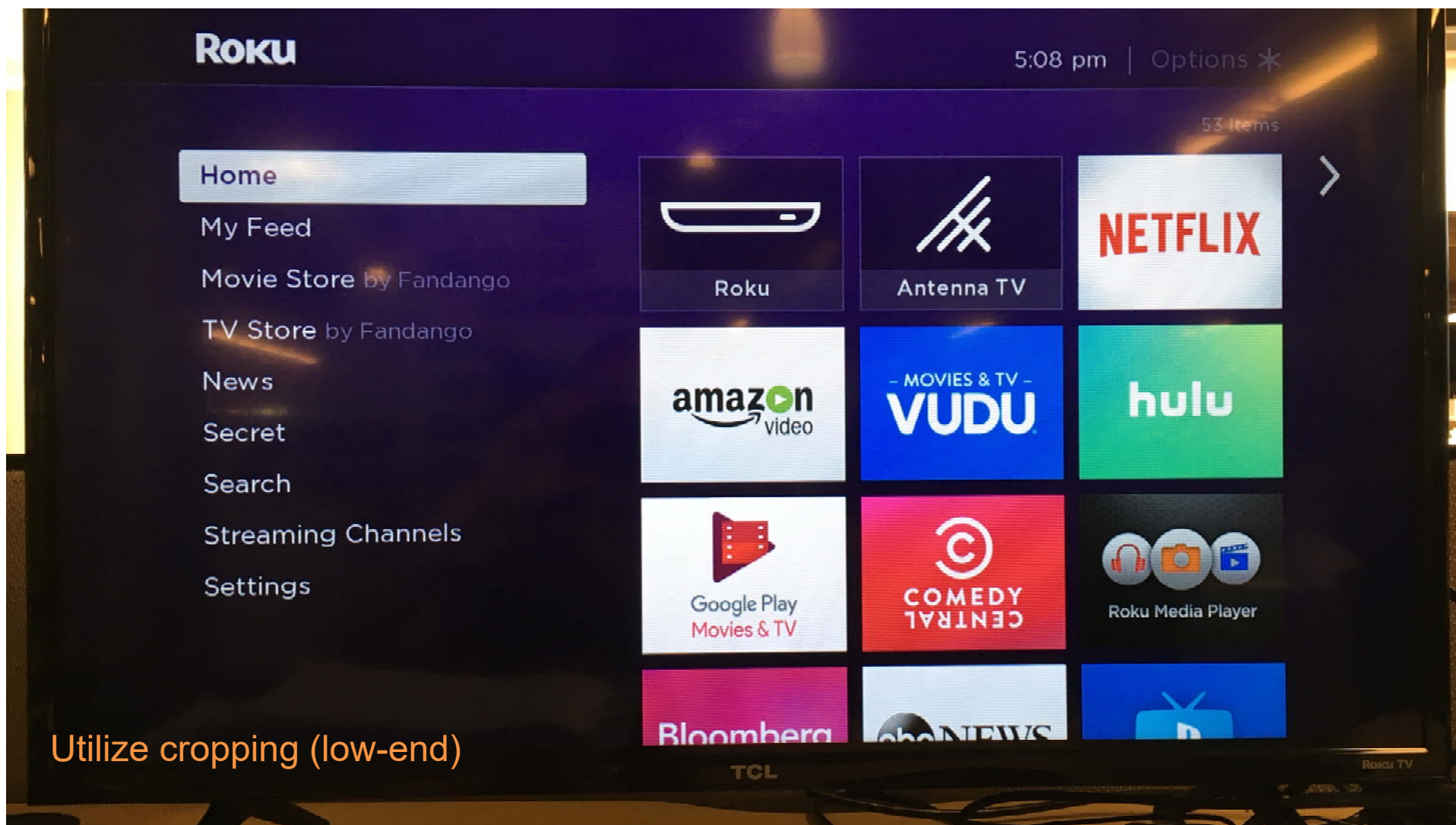
2011 | PG-13 | 2 hr 13 min  
Drama

	Rent from \$1.99	HD 
	Rent from \$2.99	HD 
	Rent from \$2.99	HD 
	Rent from \$2.99	HD 
	Follow this movie on Roku	

Faced with a tight budget, a baseball manager (Brad Pitt) and his partner (Jonah Hill) recruit bargain-bin players that scouts have labeled as flawed, but have game-winning potential.

Directed by: Bennett Miller  
Brad Pitt, Vyto Ruginis, Tammy Blanchard

Utilize cropping (low-end)



# Screen Transitions

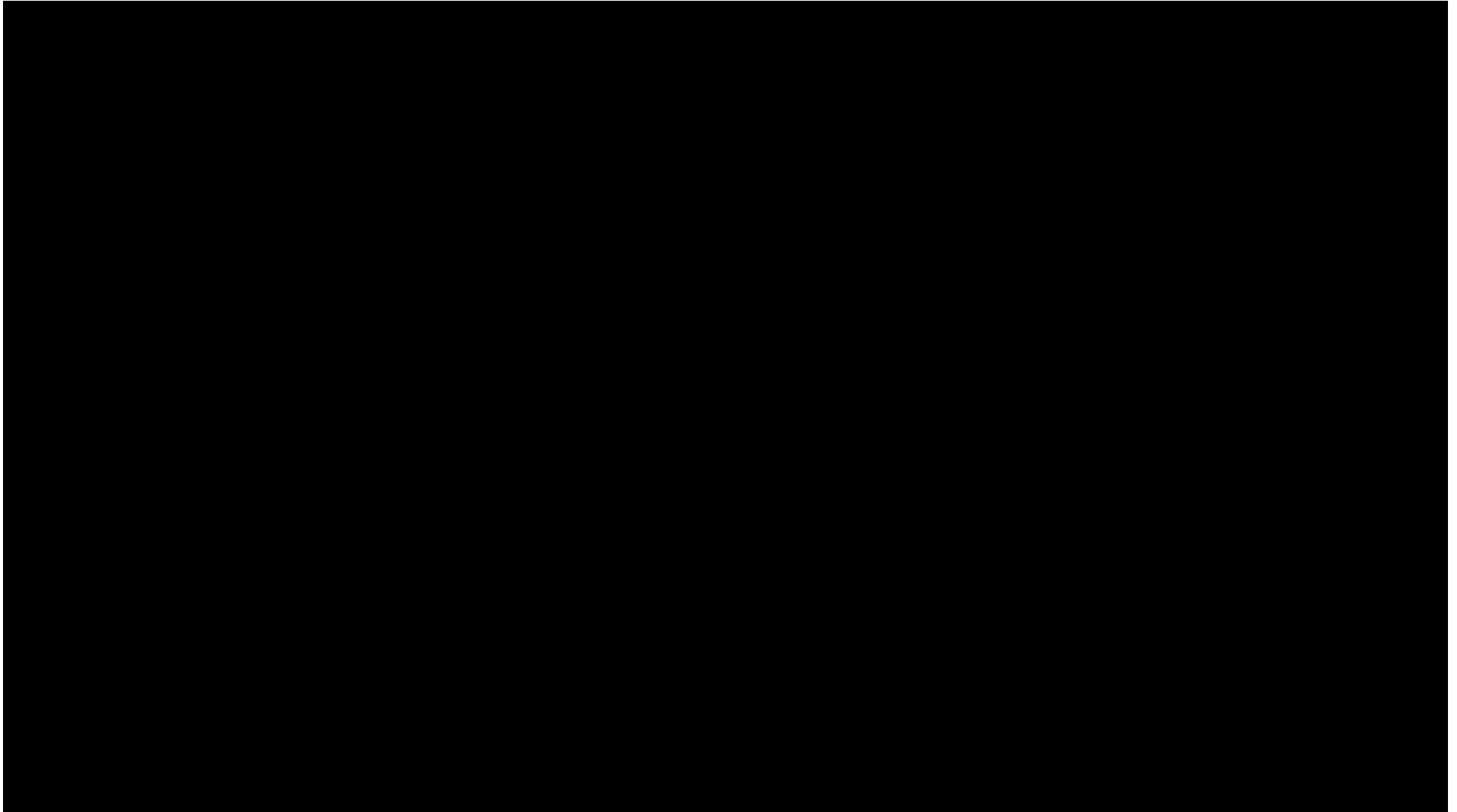
Eliminate re-orientation and analysis  
as system changes state A >> B

Experiment...



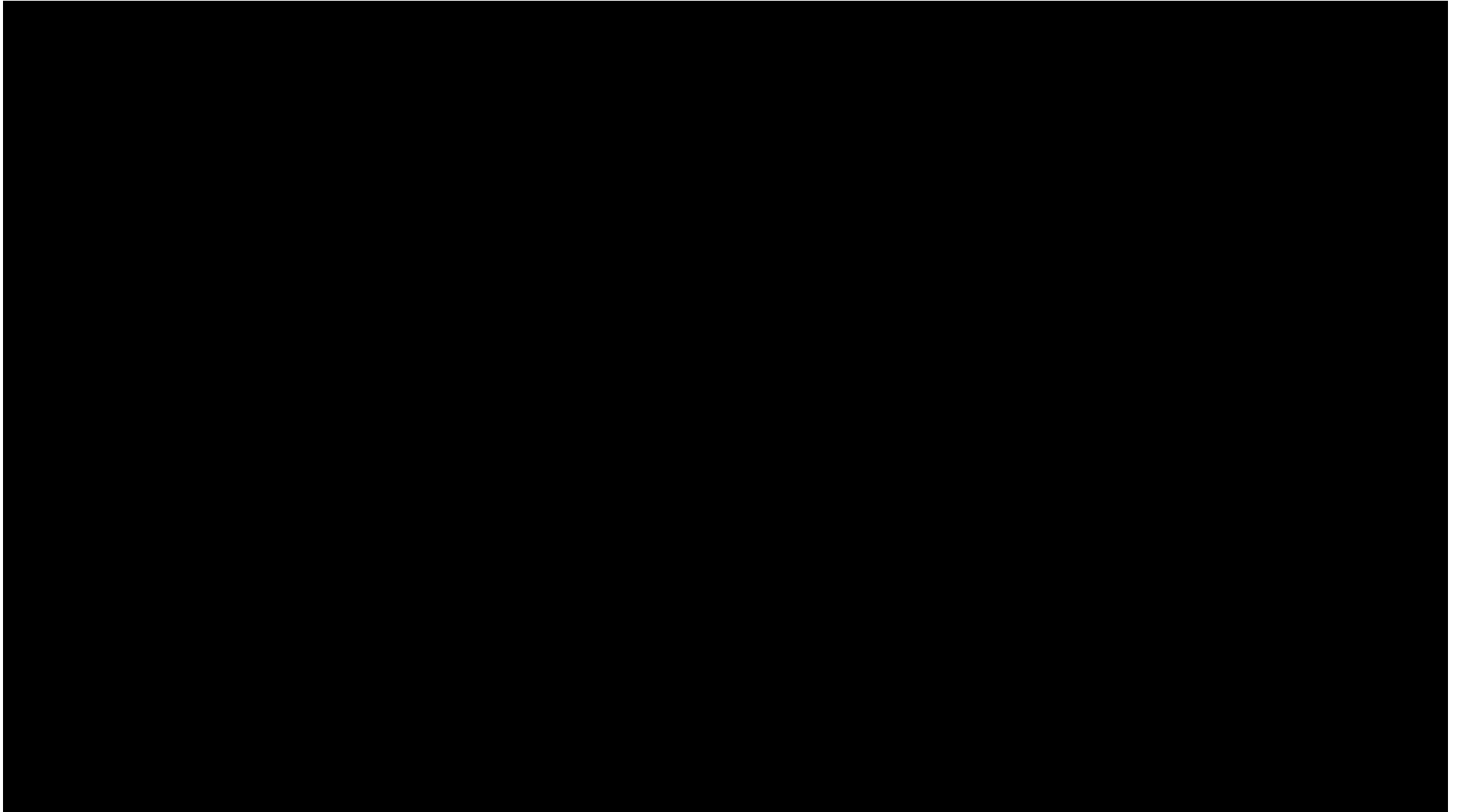


Experiment 1: Identify the changes









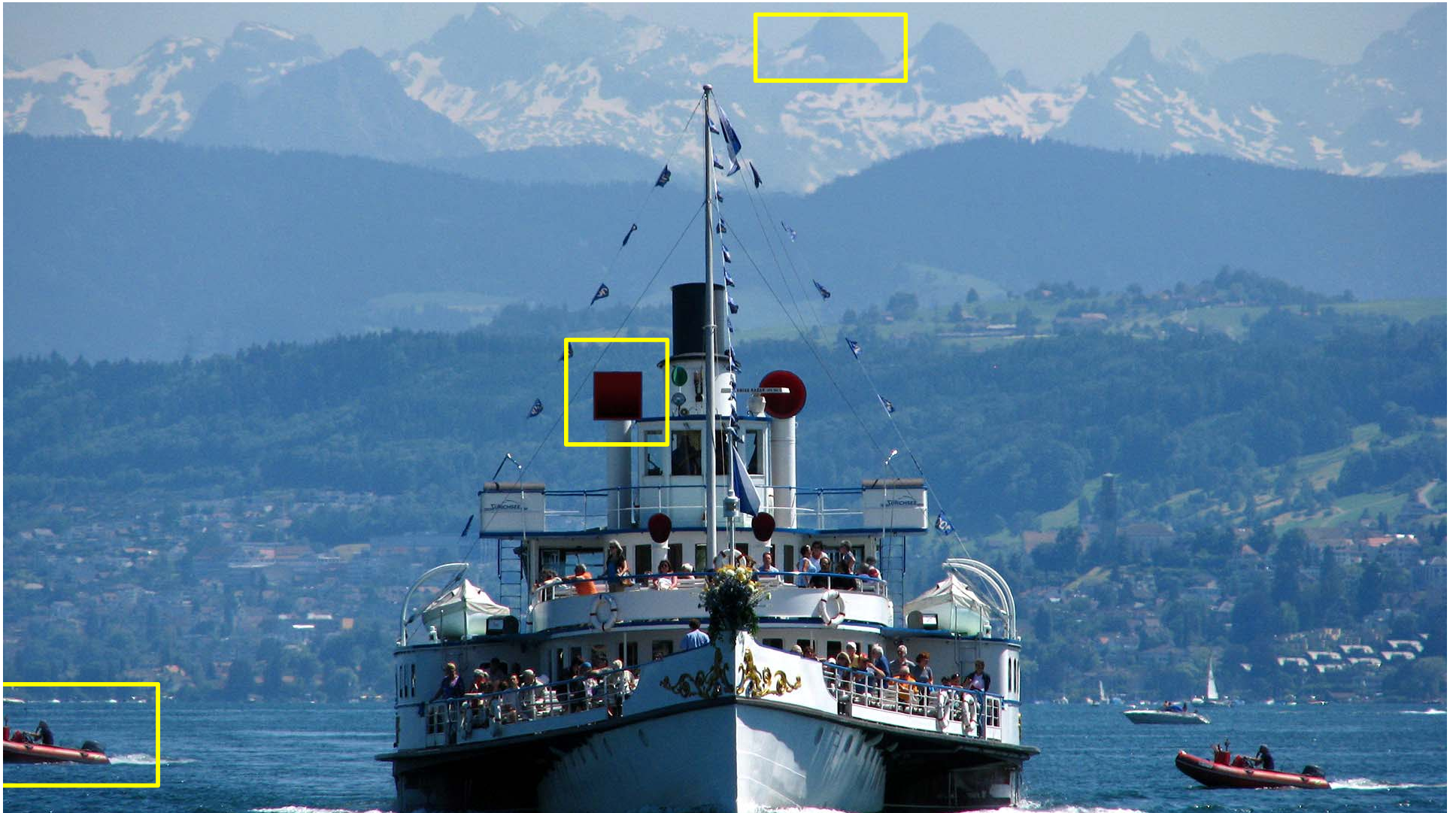


Experiment 2: Identify the changes





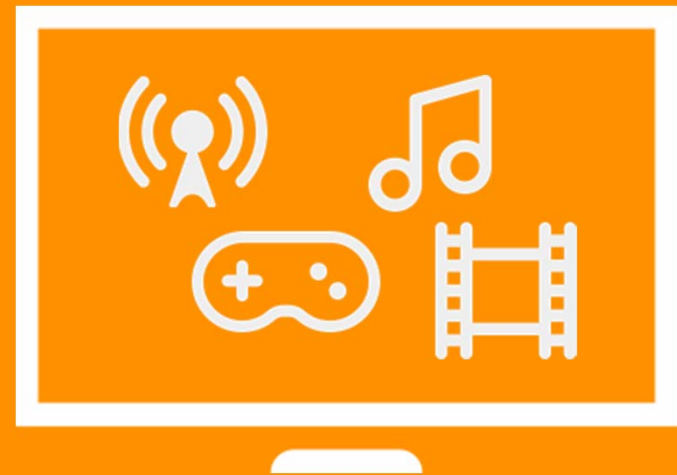






## Channel Showcase:

CenturyLink Stream is an excellent example of a channel that provides a feature-rich channel experience on high-end Roku devices, while also reducing the app's feature set on the lower-end Roku devices.



# CenturyLink

**CenturyLink**  
Stream

Search  
Home  
TV Guide  
On Demand  
DVR  
Networks  
My Content  
Settings

**Wonder Woman (2017)**  
\$5.99 for 48h  
PG-13 | 2017 | 2h 21min  
(CC) Before she was Wonder Woman, she was Diana, princess of the Amazons, trained to be an unconquerable warrior. Raised on a sheltered island paradise, when an American pilot crashes on their shores and tells of a massive conflict raging in the outside world, Diana leaves her home, convinced she can stop the...  
Directed By: Patty Jenkins  
Starring: Chris Pine, Robin Wright, Connie Nielsen, David Thewlis, Gal Gad...

Most Watched 1 of 15

On Now

(Press \* for LIVE TV)

High-end

**CenturyLink**  
Stream

Search  
Home  
TV Guide  
On Demand  
DVR  
Networks  
My Content  
Settings

**Mummy, The (2017)**  
PG-13 | 2017 | 1h 50min  
(CC) Tom Cruise stars in this spectacular version of the legend that has fascinated cultures all over the world since the dawn of civilization: THE MUMMY. Thought safely entombed deep beneath the desert, an ancient princess (Sofia Boutella) whose destiny was unjustly taken from her is awakens...

Directed By: Alex Kurtzman  
Starring: Tom Cruise, Jake Johnson, Courtney B. Vance, Annabelle Wallis, ...

Most Watched 2 of 6

On Now

Low-end

# CenturyLink

CenturyLink  
Stream TV GUIDE

(\* Options) 2:58pm

Leah Remini: Scientology and the Aftermath

Golden Era (Season 1, Episode 5)  
3:00pm - 4:00pm | TV-14

Marc Headley, the former event producer of the Church of Scientology's production company, reveals the truth about the many gala fundraisers organized by the church.

Monday	Oct 9, 2:30pm	3:30pm	4:00pm	4:30pm	5:00pm
	Leah Remini: Scientology and the Aft...	Leah Remini: Scientology and the Aft...	Leah Remini: Sci...		
	The Now Denver	Denver 7 News ...	ABC World New...	Denver 7 News ...	
	talin	Apocalypse: Stalin	Hitler: The Rise ...		
	River Monsters	River Monsters	River Monsters		

Loading more channels

High-end

CenturyLink  
Stream TV GUIDE

(\* Options) 2:51pm

Leah Remini: Scientology and the Aftermath

Golden Era (Season 1, Episode 5)  
3:00pm - 4:00pm | TV-14

Marc Headley, the former event producer of the Church of Scientology's production company, reveals the truth about the many gala fundraisers organized by the church.

Monday	Now	Next
	12:00pm We Are Marshall	3:00pm Leah Remini: Scientology and the After...
	2:00pm Pickler & Ben	3:00pm The Now Denver
	2:00pm Apocalypse: Stalin	3:00pm Apocalypse: Stalin

Loading more channels

Low-end

The Roku logo, featuring the word "Roku" in a bold, white, sans-serif font with a registered trademark symbol (®) to the upper right. The logo is set against a solid purple rectangular background.

Now this is TV.™

# Exhibit R



**Roku** (<https://www.roku.com>) Developers (<https://developer.roku.com/ove>)

< News (/developer/category/news) >

## 2018 channel certification criteria updates



tcharles - Jan 25th, 2018

### Overview

All public channels on the Roku platform are certified according to [a set of criteria \(https://developer.roku.com/develop/channel-store/certification\)](https://developer.roku.com/develop/channel-store/certification) before being published in our Channel Store. These criteria are updated annually or bi-annually to ensure a minimum level of quality and standardization across the Roku platform.

Today we're announcing the updated criteria for 2018, effective immediately. Note that there is only one new required item — all other updates for 2018 are considered recommendations.

See our [Certification \(https://developer.roku.com/develop/channel-store/certification\)](https://developer.roku.com/develop/channel-store/certification) page for the complete list of certification criteria.

### Roku SceneGraph requirements

In March 2017, [we announced \(https://blog.roku.com/developer/legacy-sdk\)](https://blog.roku.com/developer/legacy-sdk) that all channels are required to adopt Roku SceneGraph (RSG) for their visual elements by January 1, 2018. While this is still required for most model classes (platforms), publishers will be permitted to continue to maintain non-RSG versions of their apps on a select group of our older platforms. We expect these platform exemptions to enable more performant channels on some of our older platforms with less memory and processing power.

The specific platform support requirements are as follows:

- The channel must be available on all Roku platforms that receive the current firmware.
- All content from the channel service must be available on all platforms, regardless of whether the channel is built with RSG or not.

- Publishers are allowed to provide two different channel packages — one that uses RSG for its visual elements and one that doesn't — which will be provisioned to the proper platforms. Both packages must remain maintained and supported, including the non-RSG version.
- The following platforms will receive the RSG version of the package:
  - **Set-top-boxes:** Bryan, Cooper, Gilbert, Littlefield, Dallas, Austin, Mustang
  - **Streaming sticks:** Amarillo, Briscoe
  - **Roku TVs:** All Roku TV models (Longview, Fort Worth, Midland, Liberty) will receive the RSG version of the package
- The following platforms will receive the non-RSG version of the package:
  - **Set-top-boxes:** Giga, Paolo, Tyler
  - **Streaming sticks:** Jackson, Sugarland

A comprehensive list of our model classes and platform code names can be found in our [Roku Channel Developer Program overview document](https://sdkdocs.roku.com/display/sdkdoc/The+Roku+Channel+Developer+Program) (<https://sdkdocs.roku.com/display/sdkdoc/The+Roku+Channel+Developer+Program>)

## How to submit non-RSG packages

Developers and publishers who would like to maintain two versions of their channel (RSG and non-RSG) must follow these steps:

1. Create a non-certified version of your channel (<https://sdkdocs.roku.com/display/sdkdoc/Create+a+Non-Certified+Channel>). On the Package Upload window (<https://sdkdocs.roku.com/display/sdkdoc/Create+a+Non-Certified+Channel#CreateaNon-CertifiedChannel-PackageUploadWindow>), upload the non-RSG version of the channel. Be sure to provide the same Channel Store information and channel artwork as you would for the public version of the channel.
2. Create or update your public channel (<https://sdkdocs.roku.com/display/sdkdoc/Create+a+Public+Channel>). On the Package Upload window (<https://sdkdocs.roku.com/display/sdkdoc/Create+a+Public+Channel#Create:PackageUploadWindow>), upload your RSG channel package. On the Submission Survey window (<https://sdkdocs.roku.com/display/sdkdoc/Create+a+Public+Channel#Create:SubmissionSurveyWindow>), in the “Release Notes” field, state that you would like to publish a non-RSG version of your channel on low-end

devices, and provide the vanity access code for the non-certified, non-RSG channel you created in Step 1. The vanity access code can be found in the Properties window  
(<https://sdkdocs.roku.com/display/sdkdoc/Create+a+Non-Certified+Channel#CreateaNon-CertifiedChannel-PropertiesWindow>).

Roku will certify both versions of your channel.

## Maintain one Roku SceneGraph channel using Direct Publisher

Channel partners looking to quickly and easily meet the requirement for Roku SceneGraph support should consider using Roku Direct Publisher (<https://developer.roku.com/publish>) to build their channel. Not only are Direct Publisher channels sure to work across all supported Roku devices, but they automatically inherit future updates and new platform features.

Roku Direct Publisher ensures all content is available on all supported platforms. Developers considering maintaining two channel versions can reduce their overhead by leveraging Direct Publisher.

## New certification criteria

This year introduces a handful of newly recommended items, as well as one new requirement. Below is the complete list of updates to the certification criteria for 2018.

- **Required**, channels with ads — Channel must pass the “limit ad tracking (<https://sdkdocs.roku.com/display/sdkdoc/Integrating+the+Roku+Advertising+FrequencyCappingandTargetingusingRIDA>)” (LAT) value on ad server requests
- **Recommended**, channels with ads — Channel uses the General Audience Measurement APIs (<https://sdkdocs.roku.com/display/sdkdoc/Integrating+the+Roku+Advertising+GeneralAudienceMeasurement>) *instead* of the Nielsen DAR APIs. For example, channels are encouraged to use `enableAdMeasurements` as opposed to `enableNielsenDAR`
- **Recommended**, channels with episodic series content — Channel responds properly to deep link queriers using the “series” mediaType (<https://sdkdocs.roku.com/display/sdkdoc/Deep+Linking#DeepLinking->

mediaType,RequiredBehavior,andUserExperience). (Note that this will become a required item in mid-2018.)

- **Recommended**, channels with authentication (TVE, SVOD) — Channels uses the Roku Event Dispatcher (<https://sdkdocs.roku.com/display/sdkdoc/Prioritizing+Authenticated+Channel>) to communicate a user's authentication status to Roku
- **Recommended**, channels with authentication (TVE, SVOD) —Channel incorporates the Roku SSO authentication protocol (<https://sdkdocs.roku.com/display/sdkdoc/Roku+SSO+Authentication+Protocol>) for their channel activation service
- **Recommended**, channels using closed captions — Instant Replay (<https://sdkdocs.roku.com/display/sdkdoc/Closed+Caption+Support#ClosedCaption-InstantReplayButton>) rewinds 20 seconds
- **Updated**, all channels — Our content appropriateness policy has been modified with respect to content that might appear outside of the application. Content that may appear within the Roku ecosystem but outside of the channel must be appropriate for a general viewing audience. This includes Roku.com (<http://roku.com/>), Universal Search results, or the Roku homescreen UI. See Item 4.6 of the certification requirements (<https://developer.roku.com/develop/channel-store/certification>) for more details.

## Policy for “recommended” items

Roku updates our channel certification requirements no more than twice a year, in six month intervals. Generally, we aim to introduce new items as recommendations before making them required. Developers and publishers can view the inclusion of a recommended item in our criteria as an indicator that it will likely become a required feature in a subsequent update.

While recommended items are optional, they are proven features for improving your channel's overall user experience.

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Tags: [certification \(/tag/certification\)](/tag/certification), [Instant Replay \(/tag/instant-replay\)](/tag/instant-replay), [RAF \(/tag/raf\)](/tag/raf), [Roku Connect \(/tag/roku-connect\)](/tag/roku-connect), [Roku Event Dispatcher \(/tag/roku-event-dispatcher\)](/tag/roku-event-dispatcher)





## Links

- Developer Forums (<https://forums.roku.com/viewforum.php?f=34>)
- Developer Sign Up (<https://www.roku.com/developer>)

Search Developer Blog



## Categories

- Concepts (<https://blog.roku.com/developer/category/concepts>)
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